CLAIMS

What is claimed is:

1. A stepped etalon, comprising:

a first planar reflecting surface;

a second planar reflecting surface positioned parallel to and at a first distance from the first planar reflecting surface;

a third planar reflecting surface positioned parallel to and at a second distance from the first planar reflecting surface, the second distance being greater than the first distance, the second planar reflecting surface having a first edge and the third planar reflecting surface having a second edge, the first and second edges facing one another; and

a step having a sloping planar surface adjoining the first and second edges.

2. The stepped etalon according to Claim 1, wherein the step is positioned such that a portion of a light passing through the first planar reflecting surface impinges on the sloping planar surface at an angle such that it passes through the sloping planar surface.

3. The stepped etalon according to Claim 2, wherein the angle is the Brewster angle.

4. The stepped etalon according to Claim 1, wherein the first distance between the first planar reflecting surface and the second planar reflecting surface is 1.0mm, the second distance between the first planar reflecting surface and the third planar reflecting surface is 0.999910mm, and a third distance between the first edge and the second edge is 300nm.

5. The stepped etalon according to Claim 1, wherein the first, second and third reflecting surfaces are each formed on a glass surface.

6. The stepped etalon according to Claim 1, wherein the first, second and third reflecting surfaces are each formed on a silicon surface.

7. The stepped etalon according to Claim 1, wherein the first, second and third reflecting surfaces are each formed on a respective one of a plurality of plates of glass, a first spacer being provided between a first plate of glass on which the first reflecting surface is formed and a second plate of glass on which the second reflecting surface is formed, and a second spacer being provided between the first plate of glass on which the first reflecting surface is formed and a third plate of glass on which the third reflecting surface is formed, whereby air is interposed between the first planar reflecting surface and the second and third planar reflecting surfaces.

8. An apparatus for measuring the frequency of light, comprising:

a first planar reflecting surface;

a second planar reflecting surface positioned parallel to and at a first distance from the first planar reflecting surface;

a third planar reflecting surface positioned parallel to and at a second distance from the first planar reflecting surface, the second distance being less than the first distance, the second planar reflecting surface having a first edge and the third planar reflecting surface having a second edge, the first edge and the second edge facing one another;

a planar transparent member mounted between the first and second edges so as to form a step; and

a directing means for directing a collimated beam of a linearly polarized light wave onto the first planar reflecting surface, the electric component vector of the light wave impinges on the first planar reflecting surface at the Brewster angle such that the light wave propagates through the first planar without any light being reflected from the step back into the etalon and interfering with a frequency measurement.

9. The apparatus according to Claim 8, wherein the first, second and third planar reflecting surfaces and the step are each formed on a glass member.

10. The apparatus according to Claim 8, wherein the first, second and third planar reflecting surfaces and the step are each formed on a silicon member.

11. The apparatus according to Claim 8, wherein air is interposed between the first planar reflecting surface and the second and third planar reflecting surfaces and between the first planar reflecting surface and the step.

12. The apparatus according to Claim 8, wherein the first distance between the first planar reflecting surface and the second planar reflecting surface is 1.0mm, the second distance between the first planar reflecting surface and the third planar reflecting surface is 0.999910mm, and a third distance between the first and second edges is 300nm.

13. An etalon, comprised of:

a solid transparent elongated member having a first end and a second end, the first end and the second end being oppositely disposed to one another, the first end having a rectangular cross-section with a top surface, a side surface and a bottom surface, the second end having a rectangular cross-section with a top surface, a side surface and a bottom surface, the top surface of the first and second ends being coplanar, the side surfaces of the first and second ends being coplanar, the bottom surface of the first end being farther from its top surface than the bottom surface of the

second end is from its top surface, the bottom surfaces of the first and second ends being rectangular-shaped, the bottom surface of the first end having a first edge and the bottom surface of the second end having a second edge, the first edge and the second edge facing one another;

a planar step joined to the first and second edges; and

partly semi-reflecting surfaces formed on the tops and bottoms of the first and second ends and on the planar step.

14. The etalon according to Claim 13, wherein the first and second ends of the solid transparent elongated member are each fabricated from glass.

15. The etalon according to Claim 13, wherein the first and second ends of the solid transparent elongated member are each fabricated from silicon.

16. The etalon according to Claim 13, wherein some of the light projected onto the top surfaces of the first and second ends reaches the planar step at the Brewster angle.

17. The etalon according to Claim 13, wherein a first distance between the top and bottom surfaces of the first end is 1.0mm, a second distance between the top and bottom surfaces of the second end is 0.999910mm, and a third distance between the first

and second edges is 300nm.

18. The etalon according to Claim 13, further including:

projecting means for projecting a beam of collimated linearly polarized light waves onto the top surface of the etalon with the electric component vector of the light waves in the plane of incidence, the planar step having a slope with respect to the top surfaces of the first and second ends that is at the Brewster angle with respect to the light waves passing through the elongated member, whereby the small portion of the light waves impinging on the step pass through the step and are not reflected back into the interior of the solid transparent elongated member, thereby avoiding interfering with a measurement of a frequency of the light waves.

19. The etalon according to Claim 18, wherein the first and second ends of the elongated member are each fabricated from glass.

20. The etalon according to Claim 18, wherein the first and second ends of the elongated member are each fabricated from silicon.